Trend Study 17-29-97

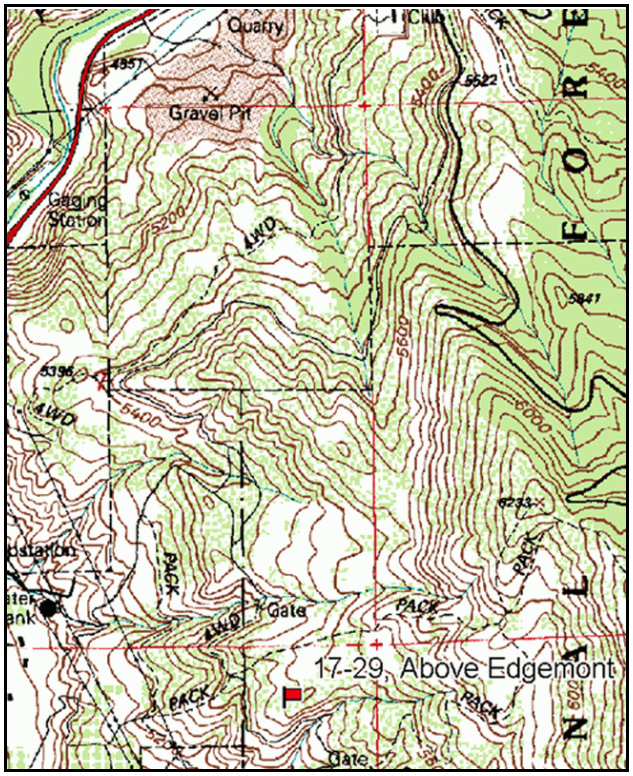
Study site name: Above Edgemont . Vegetation type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 252 degrees magnetic.

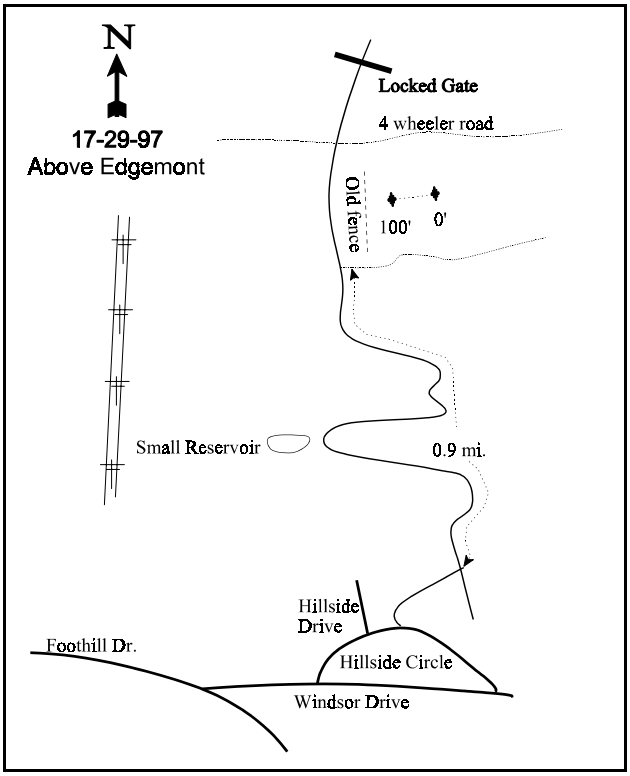
Frequency belt placement: line 1 (11, 34, 59, 71 & 95ft).

LOCATION DESCRIPTION

From Route 189 south of the Orem Power Plant at the mouth of Provo Canyon, turn onto Canyon Road. Go east and south on Canyon Road for 1.0 miles to Foothill Drive. Turn left and go up Foothill Drive to Windsor Drive. Go up Windsor Drive to Hillside Circle. Turn north onto a dirt road across from 1084 Hillside Circle. You will need to contact Dave Halton (owner, 1177 East Aspen Ridge Lane, 224-0776) in order to open the gate. Drive 0.1 miles to a fork below a hillside criss-crossed with 4-wheeler roads. Go left around the riding area, then follow the main foothill road traversing the face. Go 0.9 miles from the fork to a 4-wheeler road which goes up the slope to the right. Park here, then walk up the 4-wheeler road 75 paces. Turn left and walk 13 paces north-northwest to a sage opening. The 0-foot baseline stake is located at the top of the opening. The 100-foot baseline stake is painted red.



Map Name: Orem



Diagrammatic Sketch

Township 6S , Range 3E , Section 18

DISCUSSION

Above Edgemont - Trend Study No. 17-29

***SUSPENDED - This site was suspended in 2002.

In 1989, the original Edgemont study #15-9-83, latter changed to #27-3-83, could not be located. The study transect stakes had apparently been removed from the private land. A new study was established in 1989 further up the slope on Forest Service administered land. The new study was named "Above Edgemont" and was identified with the same study number. The site is on a open, dry, west-facing slope of 35%. The elevation is 5,500 feet on the open sagebrush/grass slope, approximately 300 feet higher than the oak-dominated 1983 site. Deer use is light to moderate in winter. Human activity was heavy in this area in 1989, but access is now through private property and a locked gate. There still appears to be OHV use, horseback riders, mountain bikers, and joggers. Winter recreational use is more restricted, but this winter range is impacted by its proximity to a large population base. A number of fruit orchards lying immediately below the study may attract or hold deer during periods other than winter. In 1983 one small buck was observed in the immediate area in late June.

Soil is similar to that described for study number 17-24 (Heisetts Hollow). Soil textural analysis indicates a clay loam with a neutral pH (7.1). Phosphorous may be limiting (9.3 ppm) to plant development for it is below the minimum (10 ppm) thought needed for normal plant growth. Vegetative and litter cover appear adequate to prevent serious erosion. However, the area is susceptible to rill and gully erosion and some evidence of this is present. A number of roads and OHV trails in the area are significant starting points for erosion.

This study samples a more open area that at one time had a fair population of the preferred mountain big sagebrush. In 1989, it was reported that there were many sagebrush skeletons occurring on the slope. The skeletons have now fallen apart and are laying on the ground as litter. Estimated sagebrush density in 1997 was 600 plants/acre, a decline of over 900 plants/acre since 1989. From the browse table one can see that the number of dead plants found on the site was 980 plants/acre. The decrease in the population can be accounted for by the number of dead sampled in 1997. There was a significant improvement in percent decadency in 1997 (20%), where it was not as high as that reported in 1989 (87%). This is most likely because many of the plants encountered at that time have now died. Vigor of the surviving plants is improved with less utilization. Oakbrush is dense in the surrounding clones with all plants encountered on the edges of the clumps. The Gambel oak does not appear to be expanding at this time. Recruitment is poor with no seedling and few young plants being sampled. Cliffrose plants are scattered around the site but none were encountered in 1997.

Bluebunch wheatgrass provides the most vegetative cover on this site. Nested frequency and quadrat frequency have increased since 1989 with plants appearing healthy at this time. Sandberg bluegrass nested frequency has conversely declined significantly since 1989. Other perennial grasses include intermediate wheatgrass and smooth brome. Cheatgrass, rattlesnake brome, and Japanese brome are also present and provide some herbaceous cover and litter.

Sixteen different forbs were sampled in 1997. Forbs include a mixture of annual weeds, poor value perennials or biennials, and a few desirable perennials. The most common forbs include yellow salsify, pale alyssum, and arrowleaf balsam root.

1989 APPARENT TREND ASSESSMENT

Soil appears stable on the site due to the fairly good vegetative and litter cover and most importantly the lack of erodible trails across the site. As has long been observed across the Wasatch Front, the trend appears downward for big sagebrush on the winter range. On these sites with limited browse forage, the remaining available shrubs tend to be heavily used. Competition between native grasses and the introduced weeds is significant.

1997 TREND ASSESSMENT

The soil trend continues to be stable. Vegetative and litter cover are adequate to reduce the amount of soil moving downslope. Browse trend is down. More mountain big sagebrush plants were lost since 1989 and the few remaining plants will have difficulty replacing themselves with the intense competition from winter annuals. The herbaceous understory composition has changed very little since 1989. The trend is stable with a poor composition of forbs. Bluebunch wheatgrass is the most important grass and should help suppress the winter annuals.

TREND ASSESSMENT
soil - stable (3)
browse - down (1)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 17 , Study no: 29

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'83	'89	'97	'83	'89	'97	'97
G	Aegilops cylindrica (a)	-	3	-	-	1	-	-
G	Agropyron intermedium	a-	a-	b19	-	-	8	.06
G	Agropyron spicatum	a150	b223	c265	65	80	87	8.65
G	Bromus brizaeformis (a)	-	-	177	-	-	66	1.52
G	Bromus inermis	-	-	3	-	-	1	.03
G	Bromus japonicus (a)	-	-	40	-	-	16	.35
G	Bromus tectorum (a)	-	-	291	-	-	87	4.97
G	Poa secunda	a8	b104	a26	4	50	12	.08
G	Sitanion hystrix	-	2	-	-	1	-	-
Total for Annual Grasses		0	3	508	0	1	169	6.84
Total for Perennial Grasses		158	329	313	69	131	108	8.83
Total for Grasses		158	332	821	69	132	277	15.67
F	Agoseris glauca	1	-	-	1	-	-	-
F	Alyssum alyssoides (a)	-	-	236	-	-	75	3.54
F	Artemisia ludoviciana	b17	a-	a-	8	-	-	-
F	Astragalus spp.	-	-	4	-	-	2	.01
F	Balsamorhiza sagittata	a-	b14	c28	-	7	12	3.05
F	Calochortus nuttallii	a1	b41	a2	1	21	2	.01
F	Castilleja spp.	-	-	2	-	-	1	.00
F	Cirsium spp.	a-	a-	b11	-	-	5	.10

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'83	'89	'97	'83	'89	'97	'97
F	Collomia grandiflora (a)	6	-	-	4	-	-	-
F	Comandra pallida	$_{a}$-	$_{ab}$7	$_{b}$13	-	3	6	.10
F	Crepis acuminata	$_{b}$52	$_{a}$-	$_{a}$-	21	-	-	-
F	Erodium cicutarium (a)	-	-	31	-	-	18	.38
F	Eriogonum racemosum	-	1	1	-	1	1	.03
F	Hedysarum boreale	5	-	-	2	-	-	-
F	Lactuca serriola	-	8	6	-	3	2	.03
F	Linum lewisii	-	-	1	-	-	1	.00
F	Lithophragma	-	-	-	-	-	-	.03
F	Lomatium spp.	-	5	-	-	3	-	-
F	Lupinus argenteus	-	1	-	-	1	-	-
F	Penstemon spp.	$_{a}$-	$_{b}$14	$_{a}$-	-	7	-	-
F	Phlox longifolia	$_{b}$38	$_{c}$113	$_{a}$9	19	49	6	.03
F	Polygonum douglasii (a)	-	-	1	-	-	1	.00
F	Senecio integerrimus	1	-	-	1	-	-	-
F	Tragopogon dubius	$_{a}$23	$_{a}$14	$_{b}$218	12	10	85	4.29
F	Vicia americana	$_{a}$-	$_{b}$74	$_{a}$3	-	32	1	.00
F	Zigadenus paniculatus	$_{a}$-	$_{b}$30	$_{b}$26	-	17	18	.22
Total for Annual Forbs		6	0	268	4	0	94	3.94
Total for Perennial Forbs		138	322	324	65	154	142	7.95
Total for Forbs		144	322	592	69	154	236	11.89

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 17 , Study no: 29

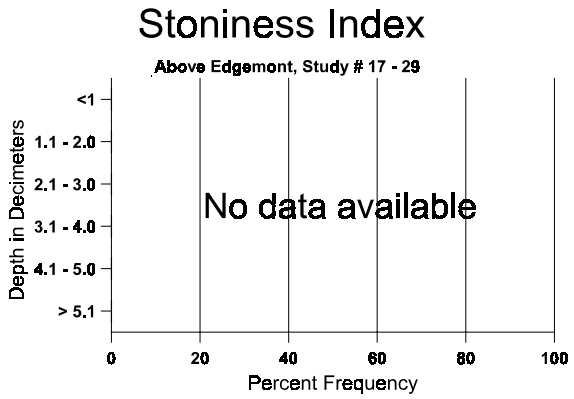
Type	Species	Strip Frequency	Average Cover %
		'97	'97
B	Artemisia tridentata vaseyana	23	.96
B	Gutierrezia sarothrae	12	.06
B	Quercus gambelii	4	-
Total for Browse		39	1.02

BASIC COVER --
Herd unit 17 , Study no: 29

Cover Type	Nested Frequency	Average Cover %		
	'97	'83	'89	'97
Vegetation	381	.25	6.00	39.70
Rock	217	18.50	13.50	6.95
Pavement	265	3.75	21.75	15.26
Litter	391	65.75	56.50	40.40
Cryptogams	9	0	0	.02
Bare Ground	114	11.75	2.25	2.87

SOIL ANALYSIS DATA --
Herd Unit 17, Study no: 29, Above Edgemont

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
15.0	52.0 (17.0)	7.1	42.4	29.1	28.6	2.7	9.3	220.8	1.2



PELLET GROUP FREQUENCY --
Herd unit 17 , Study no: 29

Type	Quadrat Frequency	Pellet Transect	
		Pellet Groups per Acre	Days Use per Acre (ha)
	'97	'97	'97
Rabbit	3	-	-
Elk	-	9	1 (2)
Deer	9	296	23 (56)

BROWSE CHARACTERISTICS --
Herd unit 17 , Study no: 29

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	83	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	89	-	2	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
M	83	2	7	-	-	-	-	-	-	-	9	-	-	-	600	30	34	9
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66	12	9	1
	97	8	8	-	-	-	-	-	-	-	16	-	-	-	320	23	48	16
D	83	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	89	-	4	16	-	-	-	-	-	-	7	-	4	9	1333			20
	97	1	1	-	-	-	-	-	-	-	-	-	-	2	120			6
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	980			49

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	50%	07%	00%	+39%
'89	30%	70%	57%	-61%
'97	30%	00%	07%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	932	Dec:		7%
'89	1532			87%
'97	600			20%

Cowania mexicana stansburiana																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	1	-	-	-	-	1	-	-	-	66	106	75	1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	100%	00%	00%	
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		-
'89	132			-
'97	0			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	24	-	-	-	-	-	-	-	-	24	-	-	-	1600	14	11	24
	97	32	-	-	-	-	-	-	-	-	32	-	-	-	640	10	19	32
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	-	-	-	1	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	04%	-61%
'97	00%	00%	06%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	0%
	'89	1732		4%
	'97	680		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
S	83	59	-	-	-	-	-	-	-	-	59	-	-	-	3933			59
	89	-	-	-	1	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	181	80	-	-	-	-	-	-	-	261	-	-	-	17400			261
	89	2	2	1	4	-	-	-	-	-	4	5	-	-	600			9
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	83	-	11	-	-	-	-	-	-	-	11	-	-	-	733	56	26	11
	89	-	-	-	-	-	-	2	-	-	2	-	-	-	133	110	63	2
	97	8	-	-	-	-	-	-	-	-	8	-	-	-	160	-	-	8
D	83	-	7	-	-	-	-	-	-	-	7	-	-	-	466			7
	89	-	2	2	-	-	-	-	-	-	1	3	-	-	266			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	35%	00%	00%	-95%
'89	27%	20%	00%	-80%
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	18599	Dec:	3%
	'89	999		27%
	'97	200		0%